

REMARKS

Claims 1-13 have been elected with traverse. Claim 12 has been cancelled, and claims 1-2 have been amended as indicated on p.2 of the Reply. Thus, claims 1-11 are currently pending in the subject application, are presently under consideration, and are believed to be in condition for allowance. Claims 14-27 have been withdrawn. The below comments present in detail the distinctive features of applicants' claimed invention over the cited art as described over the telephone on May 8, 2008.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Objection to Claim 12

Claim 12 is objected to as being dependent upon a rejected base claim, but has been indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 12 has been rewritten as prescribed including incorporation into claim 1, where claim 1 has additionally been amended to reflect the claim 1 of record as of Official Action, dated October 10, 2007. Thus, currently amended claim 1 is believed to be in condition for allowance based on the amendment to claim 1 and arguments herein. Thus, the objection to claim 12 should be withdrawn.

II. Rejection of Claims 1-3, 6, 10 and 13 Under 35 U.S.C. §103(a)

Claims 1-3, 6, 10 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Myers (U.S. Patent Application Publication 2002/0113824) in view of Dworzak (U.S. Patent Application Publication 2003/0125936).

The rejection of independent claim 1 (and associated dependent claims) is believed to be moot in light of the amendments herein incorporating allowable subject matter as prescribed. However, for the avoidance of doubt, the following arguments are provided. Without conceding the propriety of or motivation for the combination, reconsideration and withdrawal of the rejection is respectfully requested, at least because Myers alone, or in combination with Dworzak, does not teach or suggest each and every limitation of applicants' claimed invention, nor does the combination render applicants' claimed invention obvious.

To reject claims in an application under § 103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some apparent reason to combine the known elements in the fashion claimed by the patent at issue (e.g., in the references themselves, interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, or in the knowledge generally available to one of ordinary skill in the art. To facilitate review, this analysis should be made explicit. Second, there must be a reasonable expectation of success. *Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.* See MPEP § 706.02(j). See also *KSR Int'l Co. v. Teleflex, Inc.*, 550 U. S. ___, 04-1350, slip op. at 14 (2007). The reasonable expectation of success must be found in the prior art and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

Applicants' invention relates to detecting duplicate or corrupted audio files to facilitate management and removal of such files. Accordingly, applicants disclose employing audio fingerprints to automatically manage redundant or corrupted audio files. In accordance with an aspect of the disclosed subject matter, a system for managing audio information can include a fingerprinting component to identify portions of audio files. Additionally, a detector can tag one or more of the audio files for potential removal from a data storage based upon a determined distance between the audio files. Moreover, the detector can tag the audio files based upon the distance being below a predetermined threshold or based upon a lowest distance analysis.

To that end, applicants disclose using a distance as a measure of how different two compared fingerprints are (and is zero if the two fingerprints are identical). For example, the two matched files could be remixes of the same song, and the distance could be correspondingly large, although still below threshold. Accordingly, in one aspect of the disclosed subject matter, the detector can determine whether to declare a match or not, based on distance between corresponding fingerprints. Thus, if the distance falls below a fixed threshold, then a match is declared, and in the alternative aspect, the lowest such distance (computed by comparing all fingerprints in a slop window to all fingerprints in the database) can be stored for further use.

Accordingly, applicants disclose that a first audio file can be loaded, a fingerprint starting at time offset into the audio file T can be computed and stored, and the name and location of the file can also be stored. See, e.g., p.7, ll. 20-25. In addition, applicants disclose a detector that

loads a file and computes a series of fingerprints, starting at T-S seconds (*e.g.*, where T and S, a time offset into the audio file and a duration of a time window, can be set by a user) into the file and ending at T+S seconds into the file for comparison against the fingerprint computed from the first file. *See, e.g.*, p.6, ll. 19-29. If there is a match, then the detector notes that the two files contain the same audio by setting their ID index to the same number (*e.g.*, the first file processed has ID index set to 0), and then the detector moves on to the next file. *See, e.g.*, p.7, ll. 25-29. If there is not a match, the detector computes a fingerprint for the second file, starting at T-S+D seconds into the file, where D is a step size (*e.g.*, D=186 ms).

As a result, audio files can be identified as duplicates even though part of the beginning of one or both of the files may be missing. *See, e.g.*, p.8, ll. 1-5. For example, if a fingerprint F for an audio file is in the database, and a new file is being tested against F, only one of the fingerprints computed in the window (starting at T-S into the file and ending at T+S seconds into the file) need match F in order for a match to be declared. *Id.* Accordingly, the parameter S can be user selectable so that the user can balance the speed of duplicate detection against the robustness against removal of part of the beginning of one or both of the audio files. *See, e.g.*, p.8, ll. 6-15. Speed may also be further enhanced by specifying an ordering of the comparisons as follows: first check a fingerprint computed at T seconds into the file against the database of fingerprints, then check at T-D seconds, then at T+D, then at T-2D, then at T+2D, etc., until the entire window (of duration 2S seconds) has been checked. *Id.* In this manner, the most likely locations for matches are checked first, and the system can end the fingerprinting over the slop window when a match is found (*e.g.*, also called ‘bailing’), thereby speeding up the process. *Id.*

In contrast, Myers merely discloses a graphic user interface (GUI) that is usable as a commercial digital jukebox interface. To that end, Myers discloses an owner-mode of operation which can allow a user to bring up a list of *duplicate song titles* that exist in the system. *See, e.g.*, paragraph [0042]. Accordingly, a privileged user can select one of the two duplicates, then press a “delete” button in order to remove the duplicate song from hard drive. *See, e.g.*, paragraph [0103].

In this regard, amended independent claim 1 provides a system for managing audio information, comprising a fingerprinting component and a detector. In particular, amended independent claim 1 recites the limitation: *a detector that tags one or more of the audio files for potential removal from a data storage device based in part upon a distance between the*

fingerprints. Paragraphs [0042] and [0103] were previously cited for support that Myers generally discloses managing audio information and allowing duplicate deletion. These prior citations and rejections are relied on in the instant action for support for the contention that applicants' claimed invention is. Therein, it was conceded that Myers fails to enable one of ordinary skill in the art to practice the duplication detection and deletion operation since Myers is silent regarding how to detect duplicate audio files, but relies on Dworzak to provide this missing aspect. While applicants' representative generally agrees that Myers fails to enable one of ordinary skill in the art to practice the duplication detection as disclosed and claimed by applicants, applicants' representative submits that any duplicate detection as envisioned by Myers relies on detection of ***duplicate song titles***. Thus, it cannot be said that Myers discloses this limitation of applicants' claimed invention.

In addition, applicants' representative respectfully submits that Dworzak does not cure the above-identified deficiencies of the root reference, Myers. Specifically, Dworzak merely discloses techniques for determining a characteristic data record for a data signal. In particular, Dworzak discloses scanning through a sound signal, for example, determining its frequency spectrum in a multitude of intervals, and reducing the data quantity a few data points. Subsequently, a certain time domain is selected, wherein the data points representing the frequency spectrum over this time domain serve as a "fingerprint" of the sound signal, thereby determining a characteristic data set for a data signal. Additionally, Dworzak suggests using the disclosed techniques for locating duplicates. *See, e.g.*, paragraph [0013]. For example, Dworzak paragraphs [0013] and [0040] is cited for support that Dworzak, in combination with Myers teaches that two fingerprints are marked as "identical" based on their distance, as determined by the sum of their squared differences.

However, while the cited paragraphs describe comparing "fingerprints", the "fingerprints" that are compared are derived *via* the techniques disclosed in Dworzak, which focus on reducing the data quantity to a few data points. As such, the Dworzak fingerprints to be compared amount to a weighted-average of frequency values over the entire region selected for fingerprint production – essentially a singular "aggregate" fingerprint for the entire song. *See, e.g.*, Figs. 2 and 3 and paragraphs [0027]-[0028]. For example, Dworzak discloses a technique based on scanning through the sound signal, determining its frequency spectrum in a multitude of intervals and reducing the data quantity to a few data points. *See, e.g.*, paragraph [0026]. By

focusing on reducing data sizes to be stored and processed, the fingerprint is intended to be kept small at all times. *See, e.g.*, paragraph [0027]. As a result, when Dworzak discusses fingerprint comparison in paragraph [0040], Dworzak merely discloses computing the sum of the squared differences formed in a point-wise manner (for the singular “aggregate” fingerprint data points). Thus, Dworzak is silent with respect to the recited limitations of applicants’ claimed invention.

In contrast, the recited limitations of independent claim 1 provides for a series of fingerprints to be computed that can be used to tag a potential matching audio file. Specifically, amended independent claim 1 recites: *a detector that tags one or more of the audio files for potential removal from a data storage device based in part upon a distance between the fingerprints*. As a result, applicants’ representative respectfully submits that Dworzak cannot be said to disclose the detector as claimed by applicants. Moreover, applicants’ representative respectfully submits that the disclosed characteristic data set for a data signal of Dworzak arguably teaches away from using a series of fingerprints for a file, and in any case, Dworzak does not cure the above-identified deficiencies of the root reference, Myers.

Moreover, as described above, the rejection of independent claim 1 (and associated dependent claims) is believed to be moot in light of the amendments herein incorporating allowable subject matter as prescribed. Specifically, claim 1 has been amended to reflect claim 1 of record as of Official Action, dated October 10, 2007 and to incorporate subject matter that has been indicated as allowable (in the instant Action and the Official Action, dated October 10, 2007).

Regarding dependent claim 6, it is alleged that only the fingerprint datum is logically linked to any other system elements, and thus the other data correspond to nonfunctional descriptive material and are accorded weight only as general data within a database. Applicants’ representative respectfully disagrees. For instance, dependent claim 6 recites: *the detector utilizes at least two internal databases referred to as DB1 and DB2, in DB1, a record comprises a fingerprint and associated numerical quantities including a normalization factor, in DB2, a record includes at least four objects: a filename, an associated index referred to as an ID index, an ‘offset’ parameter and a ‘distance’ parameter*. Therein, the detector of claim 1 utilizes the databases logically linking the detector with the databases, for which the records are logically linked to the respective databases. In addition any description of the record elements logically relate back to the detector through the logical links to records and so on. Thus

applicants' representative respectfully submits that the alleged lack of logical linking fails to support a conclusion of obviousness.

Reconsideration and withdrawal of the rejection of independent claim 1 (and associated dependent claims 2-3, 6, 10, and 13) under 35 U.S.C. § 103(a) is respectfully requested in view of the comments above.

II. Rejection of Claims 5 and 11 Under 35 U.S.C. § 103(a)

Claims 5 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Myers in view of Dworzak and further in view of Wu, An Introduction to Object-Oriented programming with Java , WCB, McGraw-Hill (1999) (hereinafter, "Wu"). Claims 5 and 11 are dependent claims that depend directly or indirectly from independent claim 1.

The rejections of claims 5 and 11 are believed to be moot in light of the amendments herein incorporating allowable subject matter as prescribed in to independent claim 1, from which the subject claims depend. Thus the rejections of claims 5 and 11 should be withdrawn.

III. Rejection of Claims 4 and 7-9 Under 35 U.S.C. § 103(a)

Claims 4 and 7-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Myers (U.S. Patent Application Publication 2002/0113824) in view of Dworzak (U.S. Patent Application Publication 2003/0125936), and further in view of Richards (U.S. Patent Application Publication 2003/0191764). Claims 4 and 7-9 are dependent claims that depend indirectly from independent claim 1.

The rejections of claims 4 and 7-9 are believed to be moot in light of the amendments herein incorporating allowable subject matter as prescribed in to independent claim 1, from which the subject claims depend. However, for the avoidance of doubt, the following arguments are provided. Without conceding the propriety of or motivation for the combination, reconsideration and withdrawal of the rejection is respectfully requested, at least because Richards does not cure the deficiencies of the root references, Myers and Dworzak, nor does the combination render applicants' claimed invention obvious.

Regarding dependent claims 4 and 7-9, Examiner concedes that the root references, Myers and Dworzak, does not teach using a time offset as recited in dependent claim 4, but relies on Richards to provide this missing aspect of applicants' claimed invention.

However, Richards merely discloses creation of digital fingerprints representative of the properties of a digital file such as a sound recording and subsequent comparison of the fingerprints. To that end, Richards describes preprocessing the file at paragraph [0041], for example, to decompress a compressed file, performing DC offset correction, downsampling, and the like. In addition, Richards discloses advancing the audio file to the first non-noise sample prior to fingerprint generation. Advancing the audio file to the first non-noise sample prior to passing the stream to the fingerprint generation subsystem of paragraph [0041] is cited for support that Richards discloses using a time offset as recited in dependent claim 4.

In this regard, dependent claim 4 recites that ***the fingerprinting component is disposed to accept a time offset into the audio file and a duration of a time window in the files***. Applicants' representative respectfully submit that advancing an audio file to the first non-noise sample prior to passing the stream to a fingerprint generation subsystem does not disclose or make obvious accepting a time offset as applicants claim. For instance, if the Richards fingerprint generation subsystem was merely sent a time offset and an audio stream, there would be no guarantee that the starting point for the Richards fingerprint generation subsystem would be the first non-noise sample as disclosed. Conversely, if an audio file had no non-noise samples, then the beginning of the file would be the start of fingerprint generations under Richards and the time offset would be non-existent. In contrast, the time offset as applicants claim facilitates a consistent starting point regardless of noisy or non-noisy lead in to the audio file. Thus, it cannot be said that Richards discloses using the time offset as claimed by applicants. Moreover, applicants' representative respectfully submits that the disclosed fingerprint system of Richards arguably teaches away from using a time offset. For example, at paragraph [0042] Richards describes that “[i]ncreasing the frame overlap percentage increases the robustness of the fingerprint, reduces sensitivity to window misalignment, and ***can remove the need to sample a fingerprint from a known start point . . .***” In any case, applicants' representative respectfully submits that Richards does not cure the above-identified deficiencies of the root references, Myers and Dworzak, and thus claim 4 is believed to be allowable for at least the reasons cited above regarding independent claim 1.

Regarding dependent claims 7-9, the claims depend directly or indirectly from independent claim 1 and dependent claim 4, and thus the claims are believed to be allowable for at least the reasons cited above.

Reconsideration and withdrawal of the rejections of dependent claims 4 and 7-9 under 35 U.S.C. § 103(a) is respectfully requested, at least, in view of the comments above.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP562US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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